WHAT IS CLAIMED IS:

- 1. A method for receiving an optical data signal, comprising the steps of:
 - receiving an optical data signal;
 - converting the optical signal to an electrical signal;
 - (3) converting the electrical signal to a digital electrical signal; and
 - digitally processing the digital electrical signal.
- 2. The method according to claim 1, wherein step (4) comprises the step of equalizing the digital electrical signal.
- 3. The method according to claim 2, wherein step (4) further comprises the step of performing Viterbi equalization on the digital electric signal.
- 4. The method according to claim 2, wherein step (4) further comprises the step of performing feed-forward equalization on the digital electric signal.
- The method according to claim 2, wherein step (4) further comprises the step of performing decision feedback equalization on the digital electric signal.
- The method according to claim 2, wherein step (4) further comprises
 the step of performing Viterbi equalization and feed-forward equalization on
 the digital electric signal.
- The method according to claim 2, wherein step (4) further comprises the step of performing Viterbi equalization and decision feedback equalization on the digital electric signal.
- The method according to claim 2, wherein step (4) further comprises the step

performing one or more of the following types of equalization on the digital electric signal:

Viterbi equalization;

feed-forward equalization; and

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decision feedback equalization.

9. An optical receiver, comprising:

an input;

an optical-to-electrical converter coupled to said input;

an analog-to-digital converter coupled to said optical-to-electrical converter;

an digital signal processor coupled to said analog-to-digital converter.

- 10. The optical receiver according to claim 9, wherein said digital signal processor includes an equalizer.
- 11. The optical receiver according to claim 10, wherein said equalizer comprises a Viterbi equalizer.
- 12. The optical receiver according to claim 8, wherein said equalizer comprises a feed-forward equalizer.
- The optical receiver according to claim 8, wherein said equalizer comprises a decision feedback equalizer.
- 14. The optical receiver according to claim 8, wherein said equalizer comprises a Viterbi equalizer and a feed-forward equalizer.
- 15. The optical receiver according to claim 8, wherein said equalizer comprises a Viterbi equalizer and a decision feedback equalizer.
- The optical receiver according to claim 8, wherein said equalizer comprises a feed-forward equalizer and a decision feedback equalizer.
- 17. The optical receiver according to claim 8, wherein said equalizer comprises one or more of:
 - a Viterbi equalizer;
 - a feed-forward equalizer; and
 - a decision feedback equalizer.

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- 18. An optical receiver, comprising: means for receiving an optical data signal; means for converting the optical signal to an electrical signal; means for converting the electrical signal to a digital electrical signal; and means for digitally processing the digital electrical signal.
- The system according to claim 18, wherein said means for digitally processing the digital electrical signal include means for equalizing the digital electrical signal.
- 20. The system according to claim 19, wherein said means for equalizing the digital electrical signal comprise means for performing Viterbi equalization on the digital electrical signal.
- 21. The system according to claim 19, wherein said means for equalizing the digital electrical signal comprise means for performing feed-forward equalization on the digital electrical signal.
- 22. The system according to claim 19, wherein said means for equalizing the digital electrical signal comprise means for performing decision feedback equalization on the digital electrical signal.
- 23. The system according to claim 19, wherein said means for equalizing the digital electrical signal comprise means for performing Viterbi equalization and feed-forward equalization on the digital electrical signal.
- 24. The system according to claim 19, wherein said means for equalizing the digital electrical signal comprises means for performing Viterbi equalization and decision feedback equalization on the digital electrical signal.
- 25. The method according to claim 1, wherein step (1) comprises the step of receiving the optical data signal from a multimode optical fiber and step (4)

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comprises the step of equalizing multimode dispersion from the multimode optical fiber

- 26. The method according to claim 1, wherein step (1) comprises the step of receiving the optical data signal from a single mode optical fiber and step (4) comprises the step of equalizing chromatic and/or waveguide dispersion from the single mode optical fiber.
- 27. The method according to claim 1, wherein step (1) comprises the step of receiving the optical data signal from a multimode optical fiber and step (4) comprises the step of equalizing chromatic and/or waveguide dispersion from the multimode optical fiber.
- 28. The method according to claim 1, wherein step (1) comprises the step of receiving the optical data signal from a single mode optical fiber and step (4) comprises the step of equalizing polarization mode dispersion from the single mode optical fiber.
- 29. The method according to claim 1, wherein step (1) comprises the step of receiving the optical data signal from a single mode optical fiber and step (4) comprises the step of equalizing dispersion induced in the single mode optical fiber by laser chirping.
- 30. The method according to claim 1, wherein step (1) comprises the step of receiving the optical data signal from a transmitter that lacks external modulators, and step (4) comprises the step of equalizing excess dispersion induced by laser chirping.
- 31. The optical receiver according to claim 10, wherein said input is coupled to a multimode optical fiber and said equalizer equalizes multimode dispersion from the multimode optical fiber.
- 32. The optical receiver according to claim 10, wherein said input is coupled to a single mode optical fiber and said equalizer equalizes chromatic and/or waveguide dispersion from the single mode optical fiber.

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- 33. The optical receiver according to claim 10, wherein said input is coupled to a multimode optical fiber and said equalizer equalizes chromatic and/or waveguide dispersion in the multimode optical fiber.
- 34. The optical receiver according to claim 10, wherein said input is coupled to a multimode optical fiber and said equalizer equalizes polarization mode dispersion from the single mode optical fiber.
- 35. The optical receiver according to claim 10, wherein said input is coupled to a single mode optical fiber and said equalizer equalizes dispersion induced in the single mode optical fiber by laser chirping.
- 36. The optical receiver according to claim 10, wherein said input receives the optical data signal from a transmitter that lacks external modulators, and said equalizer equalizes excess dispersion induced by laser chirping.
- 37. The optical receiver according to claim 19, wherein said means for receiving an optical signal is coupled to a multimode optical fiber and said means for equalizing comprises means for equalizing multimode dispersion from the multimode optical fiber.
- 38. The optical receiver according to claim 19, wherein said means for receiving an optical signal is coupled to a single mode optical fiber and said means for equalizing comprises means for equalizing chromatic and/or waveguide dispersion from the single mode optical fiber.
- 39. The optical receiver according to claim 19, wherein said means for receiving an optical signal is coupled to a multimode optical fiber and said means for equalizing comprises means for equalizing chromatic and/or waveguide dispersion in the multimode optical fiber.
- 40. The optical receiver according to claim 19, wherein said means for receiving an optical signal is coupled to a multimode optical fiber and said

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means for equalizing comprises means for equalizing polarization mode dispersion from the single mode optical fiber.

- 41. The optical receiver according to claim 19, wherein said means for receiving an optical signal is coupled to a single mode optical fiber and said means for equalizing comprises means for equalizing dispersion induced in the single mode optical fiber by laser chirping.
- 42. The optical receiver according to claim 19, wherein said means for receiving an optical signal receives the optical data signal from a transmitter that lacks external modulators, and said means for equalizing comprises means for equalizing excess dispersion induced by laser chirping.
- 43. The method according to claim 1, wherein step (4) comprises the step of decoding a convolutional code.
- 44. The method according to claim 1, wherein step (4) comprises the step of decoding a trellis code.
- 45. The method according to claim 1, wherein step (4) comprises the step of decoding a block code.
- The optical receiver according to claim 9, wherein said digital signal processor comprises a convolutional decoder.
- The optical receiver according to claim 9, wherein said digital signal processor comprises a trellis decoder.
- The optical receiver according to claim 9, wherein said digital signal processor comprises a block decoder.
- The optical receiver according to claim 18, wherein said means for digitally processing the digital electrical signal comprises means for decoding a convolutional code.
- The optical receiver according to claim 18, wherein said means for digitally processing the digital electrical signal comprises means for decoding a trellis code.
- The optical receiver according to claim 18, wherein said means for digitally processing the digital electrical signal comprises means for decoding a block code.

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